

REMARKS

Applicant has carefully studied the outstanding Official Action. The present amendment is intended to be fully responsive to all points of rejection and is believed to place the application in condition for allowance. Favorable 5 reconsideration and allowance of the present application are hereby respectfully requested.

Applicant thanks the Examiner for the courtesy of a telephonic interview granted on 20 September 2006 to Applicant. Claims 1, 12, 26, 30 and 37 were discussed in the interview and Applicant proposed possible claim amendment 10 to overcome the Hendriksen reference (US Patent 6,330,379 B1) cited in the outstanding Official Action. The Examiner agreed that additional claim language may be added to overcome the Hendriksen reference. The substance of the interview is reflected in the present amendment.

Claims 1 – 14, 26 – 31 and 37 – 52 were examined. Claims 4 and 29 15 have been canceled without prejudice. Thus, claims 1 – 3, 5 – 14, 26 – 28, 30, 31 and 37 – 52 are now pending in the application.

Claims 1 – 7, 9, 11 – 14, 26 – 31 and 37 – 52 stand rejected under 35 USC 102(b) as being anticipated by US Patent 6,330,379 B1 to Hendriksen (“Hendriksen”).

Claims 8 and 10 stand rejected under 35 USC 103(a) as being 20 unpatentable over Hendriksen.

Hendriksen describes a cascaded optical switch comprising at least one gate.

In the outstanding Official Action the Examiner comments that 25 pending claims of the present application contain “functional language” limitations. The Examiner indicates that while the functional language limitations are not ignored, such limitations are not given patentable weight, and the claimed limitations are anticipated if a prior art apparatus is capable of performing the claimed function. The Examiner additionally comments that it would be improper to import specific structural limitations (which are not actually claimed and recited in 30 the claims) from the specification into the claims when interpreting functional

language limitations, and thus the pending claims are given in the outstanding Official Action their broadest reasonable interpretation consistent with the specification, without importing limitations from the specification into the claims. The Examiner indicates that any and all claim rejections articulated in the 5 outstanding Official Action are based on this premise.

In the specific rejection of claims 1 – 7, 9, 11 – 14, 26 – 31 and 37 – 52 the Examiner takes the position that setting the switch element located at the top portion of stage 2 in Fig. 2 of Hendriksen to “off” state in accordance with col. 3, lines 7 – 14 would inherently “enable” the rest of the switching elements to be 10 configured as a 1x2 switching matrix.

In rejecting method claims 26 et seq., the Examiner takes the position that method limitations of “providing” and operating such optical processing apparatus would be inherently met by “providing” and operating the apparatus of Hendriksen.

15 In order to facilitate allowance of the application, Applicant has amended claim 1 to include the recitations of claim 4 and clarifications regarding 2R and 3R regeneration which are supported, *inter alia*, by the second paragraph on page 23 of the specification.

Claims 12, 26, 30 and 37 have been amended similarly to claim 1.

20 Claims 4 and 29 have been canceled without prejudice.

In response to the Examiner’s comments and rejections, Applicant respectfully submits as follows:

(1) Hendriksen only refers to optical switching and does not refer to optical processing. Hendriksen does not at all show or suggest optical 25 processing configurations and the only capability provided by the optical switch of Hendriksen is switching of an optical signal to a selected one of the output paths. Therefore, it is not clear how the optical switch of Hendriksen can be considered to be capable of enabling a subset of a set of nonlinear elements to be configured in at least one optical processing configuration. 30 Such a capability is not at all taught in Hendriksen.

(2) In relation to optical processing configurations the Examiner

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takes the position that a configuration for 2R, 3R regeneration is met in Hendriksen by the absorber which is used in conjunction with the gate as described in col. 2, lines 58 – 64, wherein, according to the Examiner’s position, the absorber would inherently “shape” the optical pulse transmitted therein by transforming the transmitted optical energy into other forms of energy.

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Applicant respectfully submits that the Examiner’s interpretation of the operation of the absorber of Hendriksen is incorrect. An absorber, by definition, merely absorbs energy and in col. 2, lines 59 – 60 Hendriksen indeed refers to transforming the power in the gate into, for instance, heat. The mere absorbing functionality of the absorber is further evidenced by the following description in Hendriksen in col. 2, lines 62 – 64, where Hendriksen mentions that the absorber can, e.g., be made of a metal, or alternatively, the power in the gate is coupled into the substrate on which the switch is built. This means that the absorber is merely a piece of bulk material which serves as a “heat sink” and as such the absorber cannot “shape” any optical pulse.

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Accordingly, the configuration for 2R, 3R regeneration is not met and cannot be met by Hendriksen and in fact, as mentioned above in (1), Hendriksen does not refer to optical processing and does not at all show or suggest optical processing configurations.

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(3) Further in relation to the absorber, it is respectfully pointed out that since the absorber absorbs energy, the absorber decreases the strength of an optical pulse whereas in both 2R and 3R regeneration an optical pulse is re-amplified. Therefore, even if, for the sake of argument only, the absorber would “shape” the optical pulse transmitted therein as suggested by the Examiner, Hendriksen still cannot and does not show or suggest a configuration for 2R or 3R regeneration because Hendriksen does not show or suggest a configuration for re-amplifying an optical pulse as required for both 2R and 3R regeneration.

(4) With respect to the Examiner’s position that setting the switch

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element located at the top portion of stage 2 in Fig. 2 of Hendriksen to “off” state would inherently “enable” the rest of the switching elements, it is respectfully pointed out that each switching element in Hendriksen is independent of the other switching elements and setting any of the switching elements of Hendriksen to an “on” or “off” state merely determines an optical path terminated at a selected output path and does not enable the rest of the switching elements and clearly does not enable a subset of a set of nonlinear elements to be configured in at least one optical processing configuration.

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(5) Furthermore, Hendriksen cannot anticipate any of the independent apparatus claims 1, 12 and 37 also because there are structural differences between Hendriksen and each of claims 1, 12 and 37. Specifically, with respect to claim 1 Hendriksen does not show or suggest at least the second subset of the set of nonlinear elements which is enabled to be configured in at least one optical processing configuration. With respect to claim 12 Hendriksen does not show or suggest at least the set of nonlinear elements being configured in an optical processing configuration, and with respect to claim 37 Hendriksen does not show or suggest at least the second subset being configured in at least one optical processing configuration enabled by the configuration of the first subset.

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(6) With respect to method claims 26 et seq., Applicant respectfully submits that the rejections under 35 USC 102 of the method claims 26 et seq. are improper because the Examiner did not particularly show how the claim elements of the method claims 26 et seq. can at all be met in Hendriksen.

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Specifically, with respect to claim 26 the Examiner did not show how the claim element “configuring a first subset of the set of nonlinear elements to function as a set of ON/OFF switches in the “OFF” state to enable a second subset of the set of nonlinear elements to be configured in at least one optical processing configuration...” can at all be met in Hendriksen. Applicant believes that such a claim element cannot be met in Hendriksen,

particularly since Hendriksen does not at all refer to optical processing.

5 Further specifically, with respect to claim 27 the Examiner did not show how the claim element “configuring the second subset of the set of nonlinear elements in the at least one optical processing configuration” can at all be met in Hendriksen. Applicant believes that such a claim element cannot be met in Hendriksen, particularly since Hendriksen does not at all refer to optical processing.

10 Yet further specifically, the Examiner did show how any of the following claim elements of claim 30 can at all be met in Hendriksen: the claim element of “configuring the set of nonlinear elements in an optical processing configuration...”; and the claim element of “enabling performance of the optical processing operation on the input optical signal by the set of nonlinear elements to output an optical processing result...”.
15 Applicant believes that such claim elements cannot be met in Hendriksen, particularly since Hendriksen does not at all refer to optical processing.

Still further specifically, the Examiner did show how any of the claim elements of claims 28, 31 and 49 – 52 can at al be met in Hendriksen. Applicant believes that such claim elements cannot be met in Hendriksen.

20 Amended apparatus claims 1, 12 and 37, and all the method claims, that is, amended claim 26, claims 27 and 28, amended claim 30, claim 31, and claims 49 – 52, are therefore deemed allowable.

Claims 2, 3 and 5 – 11 depend directly or indirectly from claim 1 and recite additional patentable subject matter.

25 Also, with respect to the rejection of claim 2 it is respectfully submitted that Hendriksen does not show or suggest any parallelogram matrix. Each of the arrangements shown in Hendriksen resembles a triangular arrangement.

30 Additionally, with respect to the rejection of claim 7 it is respectfully submitted that Hendriksen does not show or suggest outputting output signals in directions which are opposite to each other. Hendriksen only shows outputting output signals in one direction from the input path 4 towards the output paths 5. In

fact, outputting output signals in a direction from the output paths 5 towards the input path 4 in Hendriksen would mean that any and all such output signals would be outputted from the input path 4 which, in terms of switching which is the purpose of Hendriksen, would be meaningless.

5 Claims 2, 3 and 5 – 11 are therefore deemed allowable.

Claims 13 and 14 depend from claim 12 and recite additional patentable subject matter.

Claims 13 and 14 are therefore deemed allowable.

10 Claims 38 – 40 depend from claim 37 and recite additional patentable subject matter.

Claims 38 – 40 are therefore deemed allowable.

Claims 41 – 46 depend from claim 1 and recite additional patentable subject matter.

Claims 41 – 46 are therefore deemed allowable.

15 Claims 47 and 48 depend from claim 12 and recite additional patentable subject matter.

Claims 47 and 48 are therefore deemed allowable.

20 In the last paragraph on page 5 of the outstanding Official Action the Examiner indicates that the application currently names joint inventors and refers to the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made.

Applicant respectfully submits that the Examiner is incorrect and the present application only names one inventor.

25 In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is now in condition for allowance. Favorable reconsideration and allowance of the present application are respectfully requested.

Respectfully submitted,

30 /Doron Handelman/

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